Topic: Translating figures in coordinate space

Question: When a figure is translated in a coordinate plane, the resulting figure...

Answer choices:

A keeps the same shape.

B keeps the same size.

C keeps the same orientation.

D keeps all three of these.

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Solution: D

A translation can be thought of as a slide with *no rotation*. The slide won't change the shape or size of the figure, and with no rotation, the orientation won't change either.

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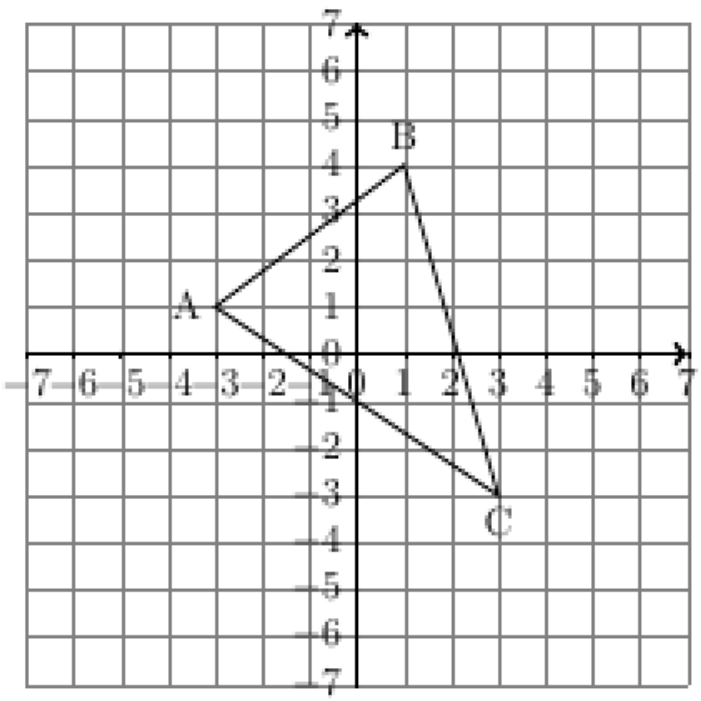
Question: What will be the new point?

If ΔABC undergoes the translation described by $T(x, y) = (x + 5, y)$, what point will be the new point B?



Answer choices:

A $(6,4)$

B $(1,9)$

C $(5,4)$

D $(-4,4)$

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Solution: A

The translation is

$$T(x, y) = (x + 5, y)$$

The $x + 5$ tells you that in the new set of points, each x value will now be 5 more than it was in the old set of points.

In other words, the figure will now be located 5 units to the right of the old figure. Values of y stay the same.

The original point B was $(1,4)$, so the new point B (often named B'), will be

$$(1 + 5, 4)$$

$$(6, 4)$$

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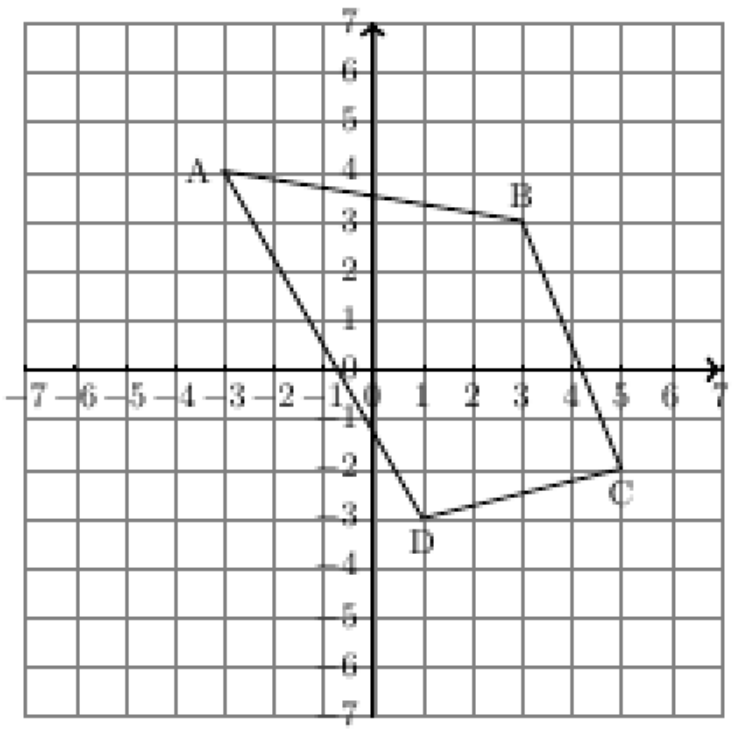
Question: What will be the new point?

If quadrilateral $ABCD$ undergoes the translation described by $T(x, y) = (x, y - 3)$, what point will be the new point C?



Answer choices:

A $(8, -2)$

B $(2, -2)$

C $(5,1)$

D $(5, -5)$

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Solution: D

The translation is

$$T(x, y) = (x, y - 3)$$

The $y - 3$ tells you that in the new set of points, each y value will now be 3 less than it was in the old set of points.

In other words, the new figure will be located 3 units downward from the old figure. Values of x stay the same.

The original point C was $(5, -2)$, so the new point C (often named C') will be

$$(5, -2 - 3)$$

$$(5, -5)$$

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